



# RODENT NEWSLETTER

Vol. 16, No. 2

1992



**ALL INDIA COORDINATED RESEARCH PROJECT  
ON RODENT CONTROL**

**Central Arid Zone Research Institute, Jodhpur**



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CENTRAL ARID ZONE RESEARCH INSTITUTE  
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## CONTENTS

	Page
Preface	1
Dr. Ishwar Prakash — A Sketch	2
Rodent problem in paddy in Andhra Pradesh—P.K. Ghosh	6
Composition of the nests of the Indian mole rat <i>B. bengalensis</i> —R.N. Banerjee	9
Laboratory and field studies on Quintox bait efficacy against rats—V.A. Rylnikov & L.E. Savinetskaya	10
Behaviour of the House Mouse ( <i>Mus m. musculus</i> ) towards new and used box traps—N.N. Meshkova & Ye. Yu. Fedorovich	12
Occurrence of mid ventral scent marking gland in some of the rodent species in Moscow Zoo—Md. Idris & S. Papov	13
Field evaluation of 3 second generation anticoagulant rodenticides in controlling roof rat ( <i>R. rattus</i> ) infestation— Muktha Bai, K.	15
Farmers' opinion on rodent management —A.P. Jain, M.P. Singh & R.S. Tripathi	16

## PREFACE

Over the years, the name of Dr. Ishwar Prakash has become almost synonymous with rodents, or rodent research, in India. For over four decades, Dr. Prakash has applied himself with total dedication to almost all fields of rodent research and has been able to establish a strong foundation for future workers to build upon. With his retirement from the prestigious Professorial Chair of Eminence at the Central Arid Zone Research Institute, Jodhpur, on reaching superannuation on December 31, 1991, a void is bound to be felt in the field of rodentology for many years to come.

**Rodent Newsletter** was started by Dr. Ishwar Prakash for the purpose of quick dissipation of new knowledge in the field of rodent pest management. The success of the NEWSLETTER is solely due to Dr. Ishwar Prakash's vision, leadership qualities and unique professional standing.

**Rodent News letter** wishes Dr. Ishwar Prakash a healthy and creative life for many more years.

Editors



**Dr. Ishwar Prakash, Ph.D., D.Sc., F.N.A.**

*A Sketch*

Born on 17th December, 1931 at Jaipur, Dr. Ishwar Prakash was educated at Mount Abu, Jaipur and Pilani. He took his M.Sc. degree in Zoology in 1952 from Birla College of Science, Pilani and secured the Ph.D. degree in Zoology from the University of Rajasthan in 1957 on the Ecology of Desert Mammals under a UNESCO Project. He was awarded the D.Sc. degree by the University of Rajasthan in 1983 on his thesis on Ecology of Desert Rodents and Pest Management. After serving in the Rajasthan Education Service (RES) and the University of Rajasthan as a Lecturer in Zoology, Dr. Prakash joined the Central Arid Zone Research Institute, Jodhpur as Animal Ecologist in 1961. He functioned as Coordinator & Principal Animal Ecologist since 1977 at the same Institute and in 1980, he was awarded the Professorial Chair of Eminence by the ICAR in recognition of his outstanding contributions and leadership in the field of Rodent Pest Management.

Dr. Prakash has done pioneering research on the Ecology of Desert Mammals, Environmental Analysis and Desertification Studies, besides establishing the discipline of Rodentology on a firm pedestal in India.

Dr. Prakash received the prestigious Rafi Ahmed Kidwai Award of ICAR for the biennium 1974-75 and the Harswarup Memorial Lecture Award of the Indian National Science Academy in 1990. He has also been elected a Fellow of INSA. He is a Foreign Fellow of the International Theriological Society.

By virtue of his being an outstanding environmentalist he has been invited to serve on a number of National and International Committees, eg.

- Environment Sciences Committee of the UGC
- Programme Advisory Committee on Animal Behaviour and Ecology, DST, as its Chairman
- Working Group of Planning Commission for the sector of Environment and Ecology
- Deptt. of Environment Expert Group on Determination of Ecological Fragility
- Advisory Board of Wildlife Institute of India
- MAB Committee of the Department of Environment, Government of India.

- ix) Rodents in Indian Agriculture, 1992 (co-edited with Dr. P.K. Ghosh; Published by Scientific Publishers, Jodhpur).
- x) Rodent Pest Management-Principles and Practices, 1976 (published by CAZRI, Jodhpur as Monograph No. 4).
- xi) The Amazing Life in the Indian Desert, 1977 (Published by CAZRI Jodhpur as Monograph No. 10).
- xii) Ecology of the Indian Desert Gerbil, 1981 (Published by CAZRI, Jodhpur as Monograph No. 10).
- xiii) Halting the March-Eco-development in the Thar, 1983 (co-authored with Dr. H.S. Mann, formerly Director of CAZRI, Jodhpur; published by Department of Environment & W.W.F., New Delhi).

In recognition of his outstanding contributions to the field of rodent control the ICAR had entrusted him with the task of formulating a National Programme for Rodent Pest Management, which has been based mostly on the results of research work done by him. He had the distinction of being deputed by the ICAR to advise the Governments of Mizoram, Arunachal Pradesh and Gujarat in the matter of rodent pest management.

Besides his work on the ecology of rodents and their control, Dr. Prakash is an authority on desert fauna in general, having carried out pioneering work on the ecology of insectivores, primates, chiropterans and carnivores inhabiting the region.

Dr. Prakash has been primarily responsible for organising many of CAZRI's publications. He has been associated with the journal-Annals of Arid Zone since its inception, has served as its Editor for 10 years and as Secretary of the Arid Zone Research Association of India, which publishes this journal, for 22 years. He has also functioned as the Editor of the Journal of Arid Environments published by the Academic Press, London.

Dr. Ishwar Prakash's vast experience of the desert environment has brought innumerable invitations for him from countries as far away as Australia, New Zealand, Thailand, USA, Philippines, U.K., France, China, USSR, Kuwait and Italy.

As during his service career, honours and accolades continue to chase Dr. Prakash even in his retirement. His recent selection as a Senior Scientist by the Indian National Science Academy is a measure of the high esteem in which this hardy perennial of the Rajasthan desert is held by the apex body of scientists in the country.



- Rajasthan State Wildlife Advisory Board
- Advisory Committee of the Bombay Natural History Society
- FAO Panel on Vertebrate Pest Management
- Steering Committee, International Theriological Congress
- IUCN Panel on Conservation
- FAO/DANIDA Panel on Rodent Pests
- ICAR Panel on Entomology
- ICMR Advisory Committee on Desert Medicine
- Drafting Committee, Desert Biosphere Reserve Project, DOE, Govt. of India

Dr. Prakash had the distinction of serving as the nominee of the Governor of Rajasthan on the Syndicate and the Senate of the University of Jodhpur. A prodigiously hard-working man, he has co-edited and authored a number of books, monographs and bulletins, besides publishing over two hundred original research papers. Some of the important books and monographs edited/authored by him are :

- i) An Environmental Analysis of the Thar Desert. 1975 (co-edited with Dr. R.K. Gupta; published by English Book Depot, Dehra Dun).
- ii) Handbook of Vertebrate Pest Control (co-authored with Mr. William Fitzwater, formerly of US Fish & Wildlife Service and FAO Expert in Animal Ecology at CAZRI; published by the ICAR; Revised by Dr. I. Prakash, III Edition 1989).
- iii) Rodents in Desert Environments, 1975 (co-edited with Dr. P.K. Ghosh; published by Dr. W. Junk of the Hague, Netherlands).
- vi) Rodents of Economic Importance in India, 1975 (co-authored with Prof. S.A. Barnett, formerly of the Dept. of Zoology, Australian National University, Canberra; published by Arnold Heinmann, New Delhi).
- v) Management of Rodent Pests, 1987 (co-authored with Dr. R.P. Mathur; published by the ICAR)
- vi) Desert Ecology, 1988. Scientific Publishers, Jodhpur.
- vii) Ecophysiology of Desert Vertebrates, 1988 (co-edited with Dr. P.K. Ghosh; published by Scientific Publishers, Jodhpur).
- viii) Rodent Pest Management, 1988 (Published by the C.R.C. Press, U.S.A.).

Dr. Prakash's love for, and attachment to CAZRI-his operational base for the last three decades-can only be reckoned as something unique. He gave freely his time, energy and expertise for any cause launched by CAZRI, be it the preparation of a publication or arrangement of a scientific gathering or preparing the five year plans without caring in the least to gain any personal recognition in the process. This, together with another of his endearing qualities, viz. owning of responsibility if anything went wrong in matters not even remotely concerned with his normal job requirements, will long be remembered by all those who have had the privilege of working with him. This spirit of selfless service in the interest of the Institute is indeed worthy of emulation by the younger generation of scientists.

As no man can really claim to be universally beloved, so Dr. Prakash too had his brickbats as well as bouquets during his service career. But he had his own way of winning friends and influencing people by the charm of his innate calm and pedigreed manners. These unique traits in his nature must have helped him win many battles of wit in CAZRI and elsewhere.

In the final analysis, Dr. Ishwar Prakash will continue to be remembered by his innumerable admirers as a gentleman Scientist who has attained great intellectual heights by dint of his disciplined hard work and fidelity to the path of research that he had chosen to tread in his youth.



## Rodent problem in paddy in Andhra Pradesh

P. K. GHOSH

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A recent survey has indicated extensive rodent damage in the rice and coconut plantations of the East and West Godavari districts of Andhra Pradesh. These areas fall within the Krishna-Godavari Zone which is one of the recognised agro-ecological zones of Andhra Pradesh.

As much as 80% of the paddy grown in the region is of IR 64 variety, the rest being MTU 991, released by ARS Maruteru. Severe rodent damage was apparent in the paddy crop in almost all villages surveyed. The farmers use both the zinc phosphide poison bait and a traditional, locally made rat trap made of palm leaves woven round a bamboo frame (called BUTTA in Telugu). It appears that var. MTU 191 is more susceptible to rodent damage than var. IR 64. According to the villagers' estimate there will be 5 per cent damage in coconuts and over 20 per cent in paddy in this area due to rodents. The damage to coconuts has been successfully minimised by using bromadiolone wax cakes on the crowns. Interestingly, while *Bandicota bengalensis* and *Mus booduga* attack paddy, it is only *Rattus rattus Wroughtoni* which nests in and damages coconuts. With no other pests, and no diseases, the paddy crop is being revaged by rodents only.

As in other predominantly coconut plantations rodents have been successfully kept in check at the Agricultural Research Station for coconut in Ambajipeta with the periodical use of bromadiolone wax cakes. However, crows and bats seem to inflict some damage.

Dr. A. Ranga Reddy, Senior Zoologist and Officer-in-Charge of the AICRP on Rodent Control at the Agricultural Research Station at Maruteru, has collected and preserved some specimens of *B. bengalensis* and *Mus booduga* captured from the crop fields in the farm. An idea of the havoc being caused by rodents may be had from the fact that during a period of 70 days from 11th November 1991, a total of 3080 rats, or more than 40 rats/day were captured/killed. For purposes of killing, poison baiting with zinc phosphide is done or use is made of the locally made snap trap (*butta*). The research farm also seeks the natural expertise of the people of a particular tribe called "Anadi" in locating and capturing rodents. The Anadi tribals, who charge Rs. 2.00 for each rat caught by them, usually follow the following technique. They first plug all burrow

openings, except one, in a given area. An earthen pot with a small hole at the bottom is packed with wet straw. The straw is ignited and the resulting smoke is channeled in the burrow system by inverting the pot and placing its mouth against the single burrow opening. The next step in the operation is based on the intuitive perception of these tribal people regarding the possible location of rodent/s in a specific burrow system. They dig enthusiastically at one or two points and almost always succeed in capturing a rodent, sometimes with its entire brood. The Anadi tribals may have a great role to play in combating the rodent menace in the Krishna-Godavari zone. These tribals now frequently use a manually operated fumigation (a blower) gadget, designed and fabricated by the ARS scientists. The station has spent a total sum of Rs. 25,404.00 during 1990-91 on rat catching alone.

The State Agriculture Department officers from the West Godavari district are equally concerned about the rodent menace. The short-duration paddy varieties are apparently more severely attacked by rodents than the long duration varieties. In 1989, rodent damage caused as much as 70-80 per cent loss in paddy yield. The concerned officers are of the view that:

- i) the Gram Panchayats may initiate a scheme under which idle farmers may be given some monetary incentive for rat catching for 3-4 years when the land remains fallow;
- ii) the small and marginal farmers may be given some subsidy for broken rice which is used as the bait material;
- iii) the ICAR may suggest to the State Government of Andhra Pradesh that the land revenue should, henceforth, include an extra levy of about Rs. 10.00/ acre for purchase of chemical poisons and bait materials for rodent control operations by the Department of Agriculture on a sustained basis;
- iv) in the case of pulses crops, the number of rodent burrows is usually very large, reaching upto 100 burrows/acre. In such cases, the presently recommended rate of poison application, viz. 20 gm of zinc phosphide/ha falls short of the requirements. The State Government officials are strongly of the view that this rate of poison application needs to be changed to 40 gm of zinc phosphide/acre. They are quite convinced of this requirement. However, this matter has to be thrashed out and a consensus reached at a meeting or workshop of Rodent Project scientists;



- v) the State Government officers often face difficulties in procuring Bromadiolone, etc. for conducting rodent control operations due to lack of funds. Some funds may possibly be made available from the centrally-sponsored Rice Thrust Programme under the Integrated Programme for Rice Development;
- vi) the fumigation implement, developed at the ARS, Maruteru may be recommended to the State Government for large-scale production and marketing; and
- vii) an Expert team may visit the Krishna-Godavari zone to assess the nature and extent of rodent damage to paddy crop during September 1992 for suggesting both short and long-term ameliorative measures.

This survey of vast tracts of rodent infested paddy fields of East and West Godavari districts, of Andhra Pradesh has brought into focus the enormity of the problem. An effective action plan to counter the menace is urgently called for.

## Composition of nests of the Indian mole rat, *Bandicota bengalensis*

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A study was conducted on the Indian Mole rat, (*Bandicota bengalensis*) during two consecutive harvesting seasons at the experimental farm of the Indian Statistical Institute, Giridih, Bihar. In the course of digging of the rat burrows, we found and collected 17 nests from the rice fields and 4 from wheat and oat fields.

On examination it was found that the nests were made of locally available standing crops and a considerable amount of grass, leaves, weeds and other materials were also present (Table 1). The structure of the nests

Table 1. Composition of nests of *B. bengalensis*

Sl. No.	Principal materials	Wt. of nest (g)	Wt. of grains (g)	Wt. of other materials (g)
1.	Paddy Straw	230.4	12.1 (paddy)	6.8 leaves
2.	do	195.0	10.5 ..	—
3.	do	183.2	2.4 ..	16.0 leaves, grass & roots
4.	do	102.6	—	—
5.	do	92.2	6.5 ..	—
6.	do	100.2	—	—
7.	do	122.3	26.0 ..	12.5 weeds & roots
8.	do	176.2	—	—
9.	do	88.4	2.5 ..	—
10.	do	84.7	7.3 ..	—
11.	do	116.3	11.4 ..	3.5 leaves
12.	Oat Straw	63.4	—	6.4 leaves & grasses
13.	do	56.4	—	5.8 leaves & weeds
14.	Wheat Straw	78.5	—	6.8 leaves
15.	do	63.2	—	5.5 leaves
16.	Paddy Straw	152.8	3.6 ..	—
17.	do	93.6	2.3 ..	6.5 leaves & weeds
18.	do	89.5	9.0 ..	—
19.	do	102.0	11.8 ..	10.2 leaves & grasses
20.	do	118.9	6.1 ..	—
21.	do	176.5	12.0 ..	— paddy seedlings





suggests that the rats use tender plants for nest construction. Stored grains, a few rice earheads along with germinated seeds, partially eaten roots and tender shoots were found in the nests.

### Laboratory & field studies on Quintox bait efficacy against rats

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Studies on ready-to-use granulated Quintox bait (Wellcome Foundation Ltd.), containing 0.075% of cholecalciferol (vitamin D<sub>2</sub>) as a.i., were carried out on Norway rats (*Rattus norvegicus*). Consumption rates and the efficacy of Quintox bait were evaluated under laboratory conditions on laboratory bred progeny of wild rats trapped in the city. The wild rats were of two lines: resistant and susceptible to the rodenticide - varvarine. The first series of experiments was conducted under no choice cage conditions. To determine the consumption rate, the Quintox bait was weighed

daily. The consumption of Quintox bait resulted in cent percent mortality of the test animals (Table 1).

Table 1. Efficacy of Quintox bait against Norway rats in no choice test

Group of rats	Amount of Quintox bait (g) consumed	Mean days to death
Varvarine resistant (n=18)	11.17	6.7
Varvarine susceptible (n=10)	9.17	5.9

In the second set the efficacy of Quintox bait was evaluated under choice conditions viz. cleaned oatmeal was also provided to the test rats along with the poison bait. Both Quintox bait and the alternative food material were weighed daily and the feeding-racks were inter changed. The duration of the experiment was of 14 days. Thereafter the animals were given the standard laboratory diet and were observed till the 21st day from the beginning of the experiment. The results are shown in Table 2.

Table 2. Comparative consumption of Quintox baits and non-poisoned food by Norway rats

Group of rats	Consumption during the experiment (average for a group, g)		Mean days to death	Mortality, %
	Quintox	Oatmeal		
Varvarine resistant (n=10)	5.52	112.1	0	0
Varvarine susceptible (n=10)	5.6	62.1	3.4	50

Observation of Quintox bait consumption rates under choice and no choice conditions showed different behaviour patterns of these rats to the bait. The majority of the rats ate the Quintox bait during the first two days of exposure. Some of the rats tasted the bait only once and did not approach the bait again till the end of the observation period. The third category of rats avoided the bait for 3-4 days after exposure even in the absence of any alternative food. And lastly, there were rats that made no attempt to taste the bait in the presence of alternative food. Such variability in the attitude of rats towards Quintox bait explains its rather low efficacy against experimental animals.

Field trials with Quintox bait were conducted on the resident rat populations of three cities. The bait was distributed at 5-10 meter distances in premises of different types (the total area covered being 2000 sq. meters). The efficacy was determined by the census baiting method i.e., the consumption of non-poisoned baits before and after that of poison baiting was recorded. On agricultural areas and in areas concerned with food materials the efficacy of Quintox against rats was about 60% and on non-food areas it was 100%. Therefore, it is concluded that Quintox bait may be applied for the control of Norway rats.



## Behaviour of The House Mouse (*Mus musculus musculus*) towards new and used box traps

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House mice were kept and observed in a 4m x 4m living room area. Various food baits were provided to them. Animals born in captivity to female animals trapped in residential areas were individually brought to the room in small boxes. At the same time, five mice (3 males and 2 females) unfamiliar to each other were let out. In all, there were six groups of animals. Enclosure or box traps were brought in after complete familiarization of the animals with the room, and, in no case, earlier than a week after letting the mice in. By that time the mice had found and occupied suitable niches, built nests, formed a network of pathways, preferred feeding sites had been established and a relatively stable structure of hierarchic relationship among the individuals had been formed.

A box-trap of Trap-2 type (Kapkan-2) is a metal box, 12 cm x 6 cm x 6 cm, with round holes on the side surfaces. Inside the box a standard bait rye bread roasted in sunflower oil - was stuck to the bent metal bar, and the protruding top edge of the door bent backward was hooked by the upper end of the bar. Ten such box-traps were placed in groups of two i.e. one used trap along with a new one. The animals' behaviour was recorded for 24 hours after trap fixing.

It was observed that in all cases when a pair of traps was approached for the first time, the animals, invariably began to investigate the used trap first, and then proceeded to examine the new one fixed nearby. This sequence was, however, not followed after 2 to 3 visits.

On first approaching a box trap, a mouse investigates it without distinguishing it from the other trap. The familiarization process may extend from 5 second to 3 minutes at a stretch. An animal may approach and investigate the same trap thoroughly upto six or more times before beginning to take the food bait. Each mouse investigates, as a rule, 1 to 3 traps for such a duration. The other traps are not subjected to such thorough investigation, the animals often coming into them without any hesitation and at once tasting the food. There was no significant difference between the number of animals trapped in used traps and in new ones. This could be explained as follows: when the mice begin to pick up food from the new traps these soon become identical with the used ones due to their repeated contacts with the investigating animals.

## Occurrence of mid ventral scent marking gland in some of the rodent species in Moscow zoo

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The Moscow Zoo maintains a large number of desert rodents for exhibiting them to the public. In addition, a great deal of research is carried out here on captive animals including rodents. We examined 12 species of gerbils and jirds in Moscow Zoo which were earlier collected from various desert regions of the erstwhile USSR. The rodents were carefully examined for the presence of the mid ventral scent marking gland which was recorded. The length and breadth of the gland were measured. It was found to be present in 10 merion species, and in one each of *Rhombomys* and *Gerbillus* species (Table 1).

The scent marking gland was found to be present in all male and female animals except in the females of *Meriones tamariscinus* (present in 66%), females of *Meriones persicus* (60%), *M. meridianus urthanicus* (26%) *M. m. penicilliga* (33%), *M. m. nagiorum* (22%) and *Gerbillus perpallidus* (7%). In the males of all the species the gland was significantly larger ( $P < 0.001$ ) than those of the females (Table 1), thereby indicating a distinct sexual dimorphism in respect of this anatomical characteristic.



Table 1. Occurrence of mid ventral scent marking gland in different gerbil species observed in the Moscow Zoo.

Species	N	Body Wt (g)	Sex	Present/absent	GL* mm	GW** mm	Area (mm)
<i>Meriones unguiculatus</i>	8	73.12 ± 5.62	M	8/8	20.25 ± 1.38	7.37 ± 0.42	146.00* ± 6.00
	6	76.00 ± 4.70	F	6/6	17.50 ± 0.80	6.16 ± 0.70	107.16 ± 11.98
<i>Meriones libicus</i>	1	96.00	M	1/1	15.00	8.00	120.00*
	5	77.80± 8.45	F	5/5	16.00± 0.10	6.12± 0.63	100.87± 15.21
<i>M. Shawi</i>	3	137.33± 13.88	M	3/3	19.00± 1.3	6.00 ± 0.57	115.00±** 17.50
	2	88.00± 8.02	F	2/2	8.00± 1.00	2.73± 0.25	22.25± 0.77
<i>M. tamariscinus</i>	6	139.80± 15.88	M	6/6	29.60± 2.41	9.60± 0.74	287.20±*** 36.35
	5	120.00± 8.50	F	3/2	20.33± 1.12	7.33± 0.68	151.00± 21.78
<i>M. tristrami</i>	6	133.66± 5.02	M	6/6	23.83± 1.66	01.00± 0.57	216.35±*** 22.24
	5	102.20± 5.90	F	5/5	16.80± 0.17	6.00± 0.70	103.20± 16.17
<i>M. persicus</i>	15	134.50± 4.99	M	9/6	19.00± 0.40	6.00± 0.33	117.00± 7.42
	11	113.20± 5.84	F	5/6	23.00± 0.64	6.20± 0.44	141.80± 8.12
<i>M. Vinogradowi</i>	7	174.00± 9.26	M	7/7	23.00± 1.01	6.57± 0.37	152.00 12.93
	7	125.51± 10.58	F	7/7	22.5± 11.70	6.71± 0.36	143.42± 14.19
<i>M. meridianus urihanicus</i>	16	64.87± 4.20	M	16/16	19.91± 1.04	7.00± 0.32	140.87 11.05
	19	56.73± 2.95	F	14/5	19.92± 0.64	6.67± 0.38	132.00± 9.10
<i>M. m. penicilliga</i>	9	57.44± 2.68	M		12.83 ± 0.79	5.83 ± 1.25	77.25± 14.32
	4	30	F	1/3	9	4.5	40.5
<i>M.m. nagiorum</i>	5	45.60± 6.44	M	5/5	16.60± 1.54	5.40± 0.79	89.40±** 13.44
	11	30.00± 3.00	F	2/9	11.00± 3.00	3.75± 0.25	41.00± 3.00
<i>Rhombomys opimus</i>	9	210.00± 23.64	M	9/9	22.62± 0.78	6.12± 0.48	136.5±*** 07.99
	8	159.87± 21.16	F	8/8	11.82± 1.78	3.62± 0.42	45.87± 10.26
<i>Gerbillus perpallidus</i>	18	47.77± 1.23	M	17/1	21.53± 0.72	7.64± 0.23	168.82±* 9.40
	15	41	F	14/1	17.00	8.00	136.00

\* Length of gland; \*\* Width of gland.

## Field evaluation of 3 second generation anticoagulant rodenticides in controlling roof rat (*R. rattus*) infestation

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The anticoagulant rodenticides selected for this study were: bromadiolone, brodifacoum and flocoumafen. These were mixed with a standard bait to get the required concentrations (Table 1), and were evaluated in different study sites having roof rat infestation. The results obtained are detailed in Table 1.

Table 1. Efficacy of three anticoagulant rodenticides against roof rats in different study sites

Study site	Poison and its concentration	Total baiting days	Total poison bait intake	Details of corpses recovered (days)
A	Bromadiolone (0.01%)	3	1025 (102.5)	98 <i>R. rattus</i> (3-12 days)
B	" (0.005%)	3	678 (33.9)	28 <i>R. rattus</i> (5-10 days)
C	Brodifacoum (0.01%)	5	793 (79.3)	69 <i>R. rattus</i>
D	" (0.005%)	5	512 (25.6)	22 <i>R. rattus</i> (5-10 days)
E	Flocoumafen (0.01%)	5	1100 (110.0)	61 <i>R. rattus</i> 21 <i>M. musculus</i> Total 82 (3-9 days)
F	" (0.005%)	5	495 (24.75)	17 <i>R. rattus</i> (4-6 days)

The three rodenticides carried in the standard bait were fairly acceptable to the rodents. On an average, bait consumption was of the order of 10.5-13.5 gm, and 24-29 gm /rat, depending upon the concentration of the rodenticide. However, the ingestion of active ingredient/rat remained almost the same in case of all the three rodenticides. The rats generally died from the 3rd day onwards of consuming the anticoagulant baits, but maximum mortality was observed between 5 and 7 days of baiting with all the rodenticides. Post-poison baiting and postoperational surveillance conducted after 4, 8 and 12 weeks of poison baiting indicated that all the three rodenticides were efficient in controlling the roof rat infestation atleast for a period of 12 weeks.



## Farmers' opinion on rodent management

A.P. JAIN, M.P. SINGH & R.S. TRIPATHI

Central Arid Zone Research Institute, Jodhpur-342003

An opinion survey of farmers from Chodha and Beenawas villages of Jodhpur District, adopted by CAZRI under its lab. to land programme, was conducted in respect of pest management, especially rodent management. Individuals from 50 farm families from each village were interrogated. The interviewees were distributed in age groups as follows: upto 30 years (28%), upto 50 years (64%), and above 51 year (8%). Amongst then 64% of the farmers are uneducated, 20% are educated upto the primary school level whereas only 16% got secondary level education.

The farmers (%) opined that pearl millet (*Pennisetum typhoides*) is damaged by rodents (96), by birds (88), by insects (88), by bluebull (80) and other antilopes (84). Among other crops, the farmers (%) informed that rodents cause losses to *moth* beans (84), *Brassica juncea* (84), tomato (76), *moong* beans (76), chillies (76) and wheat (76). This is indicative of losses caused by rodents as noted by the farmers but hardly 4% of them knew the use of Zinc phosphide whereas another 4% thought of burrow closing only as an effective technique of rodent control. However, the farmers (92%) believed that rodent damage is caused due to their own lack of knowledge on suitable management strategies. But 88% of the farmers believed that this damage could be avoided. Another 80% of the peasants reported about damage in their houses and godowns. When asked as to whether they believed that rodent damage is due to "God's will", 56% said 'no' to it. Interestingly, 100% farmers firmly opined that no natural calamity will occur if rodent control is adopted. This indicated that the mass media have been quite successful in removing religious taboos among the farming community severely hit by rodent attacks. Therefore, it is high time now that all extension personnel may give their full support to demonstrate the rodent management technology at farmers' fields.

Contributions for inclusion in the Newsletter may please be forwarded along with 1-2 good black and white photographs to :

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AICRP on Rodent Control,  
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